

In re Patent Application of:

**SMITH ET AL.**

Serial No. 09/729,562

Filed: DECEMBER 4, 2000

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REMARKS

Prior to the present amendment, claims 47-52, 54-66 and 68 were pending. With the foregoing amendments - which include a cancellation of claims 49, 56, 60 and 63 - claims 47, 48, 50-52, 54, 55, 57-59, 61, 62, 64-66 and 68 are currently pending. Reconsideration of this application, in light of the foregoing amendments and following remarks and following remarks is respectfully requested.

The rejection of claims 47 to 52, 54 to 66 and 68 under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,881,130 (Zhang), in combination with US Patent No. 6,266,395 (Liu), 6,528,451 (Galli) and/or US Patent Application Publication No. 2001/0043675 (Starr), is respectfully traversed.

By the foregoing amendments, the definition of the invention in all the pending claims is believed to overcome the rejection and better define the invention in light of the prior art. In particular, the limitations of dependent claim 49 (now cancelled) have been incorporated into independent claim 47, the limitations of dependent claim 56 have been incorporated into independent claim 51, and the limitations of dependent claim 63 have been incorporated into independent claim 61. As such, each of the independent claims 47, 51 and 61, as well as independent claim 64, clearly defines that the transfer function is determined by comparing the return waveform against a library of known waveforms corresponding to transfer functions that represent known wire plant models to estimate the transfer function of the wire communication line.

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In contrast, the reference to Liu et al, which has been cited to remedy the admitted shortcomings of Zhang, discloses finding R, L, C and G values for a given cable segment and a desired frequency, by measurement techniques, or by performing a look-up function in a database of cable properties supplied by the manufacturer. The R, L, C and G values are then used in complex calculations to determine A, B, C and D values for each segment, which are added together using complex matrix calculations. Unfortunately, using look-up information for the cable properties is highly inaccurate, and the complex calculations are time consuming and prone to error, due to their dependence on a large number of unknown factors.

The claimed invention, on the other hand, obtains an accurate measurement of the communication line in the form of a return waveform from a TDR, and then compares the waveform against a library of established waveforms to estimate a transfer function of the wire communication line. The claimed methodology provides the best of both worlds, i.e. highly accurate measurement, and accurate and fast transfer function determination. Obtaining a TDR return waveform by measurement and then comparing the waveform against a library of established waveforms, to obtain a transfer function of the communication line, is not disclosed in or implied by any of the cited references, and is therefore believed to be both novel and unobvious.

As such, it is respectfully submitted that all of the claims remaining in the application are in condition for allowance. Early and favorable consideration would be appreciated.

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Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 50-1465 and please credit any excess fees to such deposit account.

Respectfully submitted,



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